APPENDIX A – PENDING CLAIMS

1. A method for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the method comprising:

receiving a CBR service request from a node on a particular shared access channel, said CBR service request comprising a request to periodically transmit to said Head End a packet of p bytes every t milliseconds;

evaluating whether said CBR service request can be admitted; and

in response to a determination that said CBR service request can be admitted, allocating a plurality of unsolicited grants for said node at predetermined, constant, periodic intervals, to thereby provide CBR service to said node.

2. The method of claim 1 wherein said allocating includes allocating, at constant, periodic intervals, a predetermined number of G minislots on said shared access channel for each unsolicited grant allocated for said node.

3. The method of claim 1 wherein said allocating includes scheduling at least one of said plurality of unsolicited grants in a grant allocation MAP of said shared access channel, wherein said grant allocation MAP provides information to nodes on said channel relating to ownership and types of minislots on said shared access channel which are to be used by said nodes to communicate with the ACS.

4. The method of claim 3 further including providing a plurality of grant allocation MAP messages to said nodes at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved for other purposes including maintenance, contention, and data grant purposes.

5. The method of claim 4 wherein a total time length of reserved minislots in one grant allocation MAP message measures about 5 milliseconds, and wherein a total time length of said first predetermined number of CBR minislots measures about 3 milliseconds, and wherein a total time length of said second predetermined number of other minislots measures about 2 milliseconds.

6. The method of claim 1 wherein said allocating includes providing at least one linked list of grant allocation elements relating to CBR service requests by nodes on said channel, each of said elements including a Service ID (SID) field for identifying a particular node associated with each respective grant element, and a grant size (G) field for indicating a grant size of each respective grant element.

7. The method of claim 4 wherein said allocating includes providing at least one linked list of CBR grant allocation elements used for generating periodic grant allocation MAP messages, said linked list including a header comprising a first bit representation of an allocation status of each of said CBR minislots of a respective, periodically generated MAP message, said

allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

8. The method of claim 7 wherein said first bit representation of CBR minislot allocations is implemented as an ALLOC_STATE field.

9. The method of claim 7 wherein said first bit representation of CBR minislot allocations comprises a plurality of at least N bits, wherein each of said N bits in said first bit representation of CBR minislot allocations represents an allocation status of a respective minislot of said CBR minislots.

10. The method of claim 9 wherein said first bit representation of CBR minislot allocations is implemented as a 64-bit unsigned integer, 60 bits of which represent 60 CBR minislots in said periodically generated grant allocation MAP message.

11. The method of claim 7 wherein said at least one linked list includes j linked lists of grant allocation elements, each of said lists corresponding to a respective, periodically generated MAP message, each of said lists including a respective first bit representation of CBR minislot allocations, and wherein said evaluating includes implementing a second bit representation of a compiled allocation status of selected first bit representations of CBR minislot allocations from selected linked lists.

12. The method of claim 11 wherein said second bit representation of said compiled status of CBR minislot allocations is implemented as an ALLOC_VACANCY field.

13. The method of claim 11 wherein each of said selected first bit representations of CBR minislot allocations comprises a respective plurality of N bits, and wherein each bit in each first bit representation of CBR minislot allocations represents an allocation status of a respective minislot of said CBR minislots, and wherein said implementing includes performing a logical OR operation on each of said selected first bit representations of CBR minislot allocations to thereby generate a value for said second bit representation of said compiled status of minislot allocations.

14. The method of claim 11 further including using said j linked lists of grant allocations to generate at least j grant allocation MAP messages, whereby grant allocations elements in each of said linked lists are converted to minislot allocations in each of said MAP messages.

15. The method of claim 1 wherein said evaluating includes computing a grant time interval T, and a grant size G of a number of minislots needed to service said request every T milliseconds.

16. The method of claim 1 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

17. The method of claim 1 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

18. A method for implementing a plurality unsolicited grants in response to at least one constant bit rate (CBR) service request from at least one node of a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the method comprising:

providing at least one linked list of CBR grant allocation elements, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on a selected channel; and

using said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

19. The method of claim 18 further comprising providing a plurality of grant allocation MAP messages to nodes on said shared access channel at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved primarily for non-CBR purposes.

20. The method of claim 19 further including configuring a total time length of reserved minislots in one grant allocation MAP message to measures about 5 milliseconds, wherein a total time length of said first predetermined number of CBR minislots is configured to measure about 3 milliseconds, and wherein a total time length of said second predetermined number of other minislots is configured to measure about 2 milliseconds.

21. The method of claim 19 further including providing a header in said linked list, said header comprising a first bit representation of CBR minislot allocations comprising a plurality of N bits, each bit representing an allocation status of a respective CBR minislot of said respective, periodically generated MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

22. The method of claim 18 wherein each of said elements includes a Service ID (SID) field identifying a particular node associated therewith, and a grant size (G) field for indicating a size of the respective allocated grant.

23. The method of claim 18 wherein said at least one linked list providing includes providing j linked lists of CBR grant allocation elements for a selected channel, each of said lists corresponding to a respective, periodically generated MAP message.

24. The method of claim 23 further including initializing j linked lists for said selected channel, said initializing comprising:

determining a LCM value representing a least common multiple (LCM) of desired CBR periodicities;

selecting a MAP_SIZE value representing a fixed, total time length for grant allocation MAP messages; and

calculating said number of j lists according to:

j (number of linked lists) = (LCM value) / (MAP_SIZE).

25. The method of claim 18 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

26. The method of claim 18 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

27. A method for implementing a plurality unsolicited grants in response to at least one constant bit rate (CBR) service request from at least one node of a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the method comprising:

scheduling a plurality of CBR grant allocations for servicing CBR service requests from nodes on a particular shared access channel; and

providing a plurality of grant allocation MAP messages to nodes on said shared access channel at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved primarily for non-CBR purposes.

28. The method of claim 27 further including configuring a total time length of reserved minislots in each grant allocation MAP message to measure a fixed length of about 5 milliseconds, wherein a total time length of said first predetermined number of CBR minislots is configured to measure about 3 milliseconds.

29. The method of claim of claim 27 wherein said scheduling comprises:

providing at least one linked list of CBR grant allocation elements, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on said channel; and

using said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

30. The method of claim 27 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

31. The method of claim 27 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

32. A method for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate

with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for generating channel MAP messages to nodes on each shared access channel, said ACS further including a plurality of linked lists of CBR grant allocation elements, each of said CBR grant allocation elements in each of said lists corresponding to a respective unsolicited CBR grant allocated to a particular node on a selected shared access channel, wherein each of said linked lists includes a respective header comprising a first bit representation of CBR minislot allocations, said first bit representation comprising at least N bits, wherein each of said N bits represents an allocation status of a respective CBR minislots of a periodically generated grant allocation MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state, the method comprising:

(a) receiving a CBR service request from a node on a particular shared access channel, said CBR service request including request parameters to periodically transmit a packet of p bytes every t milliseconds;

(b) computing, based upon said request parameters, a grant time interval T and a grant size G for said CBR service request, said grant size value representing a number of G minislots to be allocated every T milliseconds to accommodate said CBR service request;

(c) consulting at least one selected list of said plurality of linked lists of CBR grant allocation elements to determine if said grant size of G minislots can be allocated every T milliseconds on said shared access channel; and

(d) if it is determined that said grant size of G minislots can be allocated every T milliseconds on said shared access channel, inserting at least one new CBR grant allocation element into at least one selected lists of said plurality of linked lists, said new CBR grant element representing a plurality of fixed, unsolicited grants allocated for servicing said CBR service request.

33. The method of claim 32, said consulting comprising:

(i) generating a third bit representation of said CBR service request, said third bit representation including a plurality of H bits, wherein a consecutive number of G bits of said third bit representation have a first binary value, said consecutive number of G bits representing the grant size, in minislots, of said CBR service request; and wherein a remainder of bits in said third bit representation have a second binary value, said second binary value not being equal to said first binary value;

(ii) implementing a second bit representation of a compiled allocation status of at least one selected first bit representation of CBR minislot allocations from at least one selected linked list of said plurality of lists, said second bit representation comprising at least N bits; and

(iii) performing a logical AND operation on said third bit representation and said second bit representation of said compiled status of minislot allocations, and analyzing a result of said logical AND operation.

34. The method of claim 33 wherein said second bit representation of said compiled status of CBR minislot allocations is implemented as an ALLOC_VACANCY field.

35. The method of claim 33 wherein said third bit representation is implemented as a GRANT_MASK field.

36. The method of claim 33 wherein said third bit representation is implemented as a 64-bit unsigned integer.

37. The method of claim 33 said consulting further comprising:

if each bit in the result of said AND operation is not equal to said second binary value, shifting bits in said third bit representation in a first direction and repeating (iii); and

if each bit in the result of said AND operation is equal to said second binary value, allocating a grant of size G for said CBR service request within each of said at least one selected linked lists.

38. The method of claim 33 wherein said second binary value is zero and said first binary value is one.

39. The method of claim 32 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

40. The method of claim 32 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

41. A system for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the system comprising:

an Access Control System (ACS) in communication with said Head End for coordinating node access to said Head End, said ACS having memory and at least one processor;

said memory being configured or designed to include at least one linked list of CBR grant allocation elements for each shared access channel in said network, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on a selected channel.

42. The system of claim 41 wherein said each of said at least one linked list includes a header comprising a first bit representation of an allocation status of CBR minislots of a respective, periodically generated MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

43. The system of claim 42 wherein said first bit representation of CBR minislot allocations is implemented as an ALLOC_STATE field.

44. The system of claim 42 wherein said first bit representation of CBR minislot allocations is implemented as a 64-bit unsigned integer.

45. The system of claim 44 wherein 60 bits of said 64-bit unsigned integer represent 60 CBR minislots in said periodically generated grant allocation MAP message.

46. The system of claim 41 wherein each of said elements includes a Service ID (SID) field for identifying a particular node associated with each respective allocated grant, and a grant size (G) field for indicating a grant size of each respective allocated grant.

47. The system of claim 46 wherein each of said elements further includes a burst profile type (IUC) field for indicating a particular burst profile type to be used for each respective allocated grant.

48. The system of claim 41 wherein said ACS is configured or designed to use said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective fixed-length grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

49. The system of claim 48 wherein said ACS is further configured to provide a plurality of grant allocation MAP messages to nodes on said shared access channel at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved primarily for non-CBR purposes.

50. The system of claim 49 further wherein a total time length of reserved minislots in one grant allocation MAP message measures about 5 milliseconds, and wherein a total time length of said first predetermined number of CBR minislots measures about 3 milliseconds, and wherein a total time length of said second predetermined number of other minislots is configured to measure about 2 milliseconds.

51. The system of claim 41 wherein said at least one linked list includes j linked lists of CBR grant allocation elements for a selected channel, each of said lists corresponding to a respective, periodically generated MAP message.

52. The system of claim 51, said system further comprising:

means for determining a LCM value representing a least common multiple (LCM) of desired CBR periodicities;

means for selecting a MAP_SIZE value representing a fixed, total time length for grant allocation MAP messages; and

means for calculating said number of j lists according to:

j (number of linked lists) = (LCM value) / (MAP_SIZE).

53. The system of claim 41 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

54. The system of claim 41 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

55. A system for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the system comprising:

an Access Control System (ACS) in communication with said Head End for coordinating node access to said Head End, said ACS having memory and at least one processor;

said ACS being configured or designed to generate a plurality of grant allocation MAP messages to nodes on a selected channel at constant, periodic intervals, each MAP message

corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved for other purposes including maintenance, contention, and data grant purposes.

56. The system of claim 55 wherein a total time length of reserved minislots in each grant allocation MAP message measures a fixed length of about 5 milliseconds, and wherein a total time length of said first predetermined number of CBR minislots measures about 3 milliseconds.

57. The system of claim of claim 55 further comprising:

memory configured or designed to include at least one linked list of CBR grant allocation elements, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on said channel.

58. The system of claim 57 wherein said ACS is configured or designed to use said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

59. The method of claim 55 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

60. The system of claim 55 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

61. A system for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the system comprising:

an Access Control System (ACS) in communication with said Head End for coordinating node access to said Head End, said ACS having memory and at least one processor;

said ACS being configured or designed to receive a CBR service request from a node on a particular shared access channel, said CBR service request comprising a request to periodically transmit a packet of p bytes every t milliseconds;

said ACS further being configured or designed to evaluate whether said CBR service request can be admitted; and

wherein said ACS is further configured or designed to allocate a plurality of unsolicited grants for said node at predetermined, constant, periodic intervals, in response to a determination that said CBR service request can be admitted, to thereby provide CBR service to said node.

62. The system of claim 61 wherein said ACS is further configured or designed to schedule at least one of said plurality of unsolicited grants in a grant allocation MAP of said shared access channel, said grant allocation MAP providing information to nodes on said channel relating to ownership and types of minislots on said shared access channel which are to be used by said nodes to communicate with the HEAD END.

63. The system of claim 62 wherein said ACS is further configured or designed to provide a plurality of fixed-length grant allocation MAP messages to said nodes at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved for other purposes including maintenance, contention, and data grant purposes.

64. The system of claim 63 wherein a total time length of reserved minislots in one grant allocation MAP message measures about 5 milliseconds, and wherein a total time length of said first predetermined number of CBR minislots measures about 3 milliseconds, and wherein a total time length of said second predetermined number of other minislots measures about 2 milliseconds.

65. The system of claim 61 wherein said ACS is further configured or designed to provide at least one linked list of grant allocation elements relating to CBR service requests by nodes on said channel, each of said elements including a Service ID (SID) field for identifying a particular node associated with each respective grant element, and a grant size (G) field for indicating a grant size of each respective grant element.

66. The system of claim 63 wherein said ACS is further configured or designed to provide at least one linked list of CBR grant allocation elements used for generating periodic grant allocation MAP messages, said linked list including a header comprising a first bit representation of an allocation status of each of said CBR minislots of a respective, periodically generated MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

67. The system of claim 66 wherein said first bit representation of CBR minislot allocations is implemented as an ALLOC_STATE field.

68. The system of claim 66 wherein said at least one linked list includes j linked lists of grant allocation elements, each of said lists corresponding to a respective, periodically generated MAP message, each of said lists including a respective first bit representation of CBR minislot allocations.

69. The system of claim 68 wherein said ACS is further configured or designed to provide an second bit representation of said compiled status of minislot allocations representing a compiled allocation status of selected first bit representations of CBR minislot allocations from selected linked lists.

70. The system of claim 69 wherein each of said selected first bit representations of CBR minislot allocations comprises a respective plurality of N bits, each bit in each first bit representation of CBR minislot allocations representing an allocation status of a respective minislot of said CBR minislots, and

wherein said second bit representation of said compiled status of minislot allocations comprises N bits, each bit in said second bit representation of said compiled status of minislot allocations representing a result of a logical OR operation between corresponding bits of each of said selected first bit representations of CBR minislot allocations.

71. The system of claim 68 wherein said ACS is further configured or designed to provide use said j linked lists of grant allocations to generate at least j grant allocation MAP

messages, whereby grant allocations elements in each of said linked lists are converted to minislot allocations in each of said MAP messages.

72. The system of claim 61 wherein said ACS is further configured or designed to compute a grant time interval T, and a grant size G of a number of minislots needed to service said request every T milliseconds.

73. The method of claim 61 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

74. The system of claim 61 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

75. A system for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the system comprising:

an Access Control System (ACS) in communication with said Head End for coordinating node access to said Head End, said ACS having memory and at least one processor;

said ACS being configured or designed to generate channel MAP messages to nodes on at least one channel of the network;

said ACS including a plurality of linked lists of CBR grant allocation elements, each of said CBR grant allocation elements in each of said lists corresponding to a respective unsolicited CBR grant allocated to a particular node on a selected shared access channel.

76. The system of claim 75 wherein each of said linked lists includes a respective header comprising a first bit representation of CBR minislot allocations, said first bit representation comprising at least N bits, wherein each of said N bits represents an allocation status of a respective CBR minislots of a periodically generated grant allocation MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

77. The system of claim 76 wherein said ACS further comprises an second bit representation of said compiled status of minislot allocations representing a compiled allocation status of at least one selected first bit representation of CBR minislot allocations from at least one selected linked list of said plurality of lists.

78. The system of claim 77 wherein each bit in said second bit representation of said compiled status of minislot allocations represents a result of a logical OR operation between corresponding bits of each of said selected first bit representations of CBR minislot allocations.

79. The system of claim 75 wherein said ACS is further configured or designed to receive a CBR service request from a node on a particular shared access channel, said CBR service request including request parameters to periodically transmit a packet of p bytes every t milliseconds;

said ACS further being configured of designed to compute, based upon said request parameters, a grant time interval T and a grant size G for said CBR service request, said grant

size value representing a number of G minislots to be allocated every T milliseconds to accommodate said CBR service request;

said ACS further being configured of designed to consult at least one selected list of said plurality of linked lists of CBR grant allocation elements to determine if said grant size of G minislots can be allocated every T milliseconds on said shared access channel; and

said ACS further being configured of designed to insert at least one new CBR grant allocation element into at least one selected lists of said plurality of linked lists if it is determined that said grant size of G minislots can be allocated every T milliseconds on said shared access channel, said new CBR grant element representing a plurality of fixed, unsolicited grants allocated for servicing said CBR service request.

80. The system of claim 75, said ACS further comprising a third bit representation of a CBR service request from a node on a particular shared access channel, said CBR service request including request parameters to periodically transmit a packet of p bytes every t milliseconds, said third bit representation including a plurality of H bits, wherein a consecutive number of G bits of said third bit representation have a first binary value, said consecutive number of G bits representing the grant size, in minislots, of said CBR service request; and wherein a remainder of bits in said third bit representation have a second binary value, said second binary value not being equal to said first binary value.

81. The system of claim 80 wherein said third bit representation is implemented as a GRANT_MASK field.

82. The system of claim 80 wherein said third bit representation is implemented as a 64-bit unsigned integer.

83. The system of claim 80 wherein said ACS is further configured or designed to shift bits in said third bit representation in a first direction if each bit in the result of said AND operation is not equal to said second binary value; and

wherein said ACS is further configured or designed to allocate a grant of size G for said CBR service request within each of said at least one selected linked lists if each bit in the result of said AND operation is equal to said second binary value.

84. The system of claim 80 wherein said second binary value is zero and said first binary value is one.

85. The method of claim 75 wherein said network is a wireless network, and wherein said plurality of nodes are wireless nodes.

86. The system of claim 75 wherein said network is a cable modem network, wherein said plurality of nodes are cable modems, and wherein said ACS includes a Cable Modem Termination System (CMTS).

87. A computer program product for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

computer code for receiving a CBR service request from a node on a particular shared access channel, said CBR service request comprising a request to periodically transmit a packet of p bytes every t milliseconds;

computer code for evaluating whether said CBR service request can be admitted; and

computer code for allocating a plurality of unsolicited grants for said node at predetermined, constant, periodic intervals, in response to a determination that said CBR service request can be admitted, to thereby provide CBR service to said node.

88. The computer program product of claim 87 further comprising:

computer code for computer code for scheduling at least one of said plurality of unsolicited grants in a grant allocation MAP of said shared access channel, wherein said grant allocation MAP provides information to nodes on said channel relating to ownership and types of minislots on said shared access channel which are to be used by said nodes to communicate with the ACS; and

computer code for providing a plurality of grant allocation MAP messages to said nodes at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved for other purposes including maintenance, contention, and data grant purposes.

89. The computer program product of claim 88 wherein said allocating code includes computer code for providing at least one linked list of CBR grant allocation elements used for generating periodic grant allocation MAP messages, said linked list including a header comprising a first bit representation of an allocation status of each of said CBR minislots of a respective, periodically generated MAP message, said allocation status indicating one of at least two minislot status states including a reserved state and a vacant state.

90. A computer program product for implementing a plurality unsolicited grants in response to at least one constant bit rate (CBR) service request from at least one node in a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

computer code for providing at least one linked list of CBR grant allocation elements, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on a selected channel; and

computer code for using said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

91. The computer program product of claim 90 further comprising computer code for providing a plurality of grant allocation MAP messages to nodes on said shared access channel at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved primarily for non-CBR purposes.

92. A computer program product for implementing a plurality unsolicited grants in response to at least one constant bit rate (CBR) service request from at least one node in a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for coordinating node access to said Head End, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

computer code for scheduling a plurality of CBR grant allocations for servicing CBR service requests from nodes on a particular shared access channel; and

computer code for providing a plurality of grant allocation MAP messages to nodes on said shared access channel at constant, periodic intervals, each MAP message corresponding to a first predetermined number N of minislot allocations reserved primarily for CBR purposes, and a second predetermined number M of minislot allocations reserved primarily for non-CBR purposes.

93. The computer program product of claim of claim 92 wherein said scheduling code comprises:

computer code for providing at least one linked list of CBR grant allocation elements, said linked list including a plurality of CBR grant allocation elements, wherein each of said CBR grant allocation elements corresponds to a respective unsolicited CBR grant allocated to a particular node on said channel; and

computer code for using said plurality of CBR grant allocations elements in said at least one linked list to generate at least a portion of a respective grant allocation MAP message at constant, periodic intervals, wherein said plurality of CBR grant allocations elements are converted to respective unsolicited CBR minislot grant allocations in said respective MAP message.

94. A computer program product for providing constant bit rate (CBR) service over a computer network, the network including a Head End and a plurality of nodes, the network further including at least one shared access channel utilized by at least a portion of said plurality of nodes to communicate with said Head End, said network further including at least one downstream channel utilized by said Head End to communicate with said portion of nodes, the Head End in communication with an Access Control System (ACS) for generating channel MAP messages to nodes on each shared access channel, said ACS further including a plurality of linked lists of CBR grant allocation elements, each of said CBR grant allocation elements in each of said lists corresponding to a respective unsolicited CBR grant allocated to a particular node on a selected shared access channel, wherein each of said linked lists includes a respective header comprising a first bit representation of CBR minislot allocations, said first bit representation comprising at least N bits, wherein each of said N bits represents an allocation status of a respective CBR minislots of a periodically generated grant allocation MAP message, said

allocation status indicating one of at least two minislot status states including a reserved state and a vacant state, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

(a) computer code for receiving a CBR service request from a node on a particular shared access channel, said CBR service request including request parameters to periodically transmit a packet of p bytes every t milliseconds;

(b) computer code for computing, based upon said request parameters, a grant time interval T and a grant size G for said CBR service request, said grant size value representing a number of G minislots to be allocated every T milliseconds to accommodate said CBR service request;

(c) computer code for consulting at least one selected list of said plurality of linked lists of CBR grant allocation elements to determine if said grant size of G minislots can be allocated every T milliseconds on said shared access channel; and

(d) computer code for inserting at least one new CBR grant allocation element into at least one selected list of said plurality of linked lists, if it is determined that said grant size of G minislots can be allocated every T milliseconds on said shared access channel, said new CBR grant element representing a plurality of fixed, unsolicited grants allocated for servicing said CBR service request.

95. The computer program product of claim 94, said consulting code comprising:

(i) computer code for generating a third bit representation of said CBR service request, said third bit representation including a plurality of H bits, wherein a consecutive number of G bits of said third bit representation have a first binary value, said consecutive number of G bits representing the grant size, in minislots, of said CBR service request; and wherein a remainder of bits in said third bit representation have a second binary value, said second binary value not being equal to said first binary value;

(ii) computer code for implementing a second bit representation of a compiled allocation status of at least one selected first bit representation of CBR minislot allocations from at least one selected linked list of said plurality of lists, said second bit representation comprising at least N bits; and

(iii) computer code for performing a logical AND operation on said third bit representation and said second bit representation of said compiled status of minislot allocations, and analyzing a result of said logical AND operation.

96. The computer program product of claim 95 said consulting code further comprising:

computer code for shifting bits in said third bit representation in a first direction and repeating (iii) if each bit in the result of said AND operation is not equal to said second binary value; and

computer code for allocating a grant of size G for said CBR service request within each of said at least one selected linked lists if each bit in the result of said AND operation is equal to said second binary value.